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**AN ANALYSIS OF FACTORS RESPONSIBLE FOR THE RAPID  
GROWTH  
OF E-LEARNING IN INDIA**

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**Abstract :**

There is one crucial and urgent part of the society that has been tapped by developments, which is the idea of web-based learning that is otherwise called e-learning. E-learning means studying or learning on various platforms by using electronic media (computer, laptop and mobile) outside of a conventional study hall, it is generally a course, program, degree delivered online through various platforms. It is a means that can help in the development and to increase the reach of the educational sector in India. The purpose of this paper is to inspect and recognize the significant components liable for the rapid growth of E-learning in India. A study was conducted on 237 people (students of the school, undergraduate, postgraduate, and working professionals) through a random sampling technique followed by exploratory factor analysis which was employed to find out the crucial factors which are the main reason for the rapid expansion of E-learning. The outcome shows that: Service quality of online education, technological development, external factors, and ease of learning are the major factors that have impacted the online learning or

education system in India the most. This study can assist institutions, government or companies in decision making regarding online programs.

## 1. Introduction:

The term E-learning has been around for quite a long time in the information systems industry which consist of learning through online platforms and it is one of the most significant development (Wang, 2003). Online learning market holds a great potential it has made long distance learning, teaching and training possible as we can see that for the past years' primary, secondary and tertiary education have witnessed unprecedented growth due to omnipresent Internet connectivity, the availability of smartphones, and significant advances in technology. The E-learning value chain basically consist of content supplier, technology provider/platform and consumer it facilitates convenient, quick, on -the- go and 24x7 access. It overcomes geographical barriers and ensures impartial access to education. The COVID-19 pandemic has triggered the declaration of lockdown by several nations. According to a report by UNESCO, this pandemic will adversely Affect 32 crore students, due to the closure of schools and colleges because of lockdown in India (en.unesco.org).

Although e-learning was existent in India before the pandemic long ago, the COVID-19 crisis has given a boost to e-learning along with other factors. Many online applications like Google duo, Zoom, Skype, Google meet, Hangouts, etc, are making it easier to conduct online classes. E-learning in India consists of both online and offline players with an online presence. C2C business model has also surfaced where a consumer can directly interact with the other consumer in an online platform, here the third party job is to facilitate the interaction between the two party by offering a technological platform. The other one is B2C where content provider creates and provides contents in the form of lecture videos, animated videos, text and notes to the online provider (3rd party) then the content is delivered to the consumer.

Different categories which makes online education market consist of –

- 1) Primary and secondary education (class 1-12 and college)- A new segment is emerged in e-learning which is online tutoring basically for classes from 1-12 where the teachers recruited by the company provide online classes (personalized) to the student. “The whole primary and secondary education segment was measured at INR 11.99Bn in 2018 and is anticipated to grow INR 123.65Bn by 2024, increasing at a CAGR of ~46.48% during the 2019-2024 period” (ResearchAndMarkets.com).
- 2) Reskilling and certification (for additional knowledge)- Students and professionals are constantly looking to obtain new skills, expertise and build competencies due to the rapidly change in the new technologies and market demand. This part was measured at “INR 11.99Bn in 2018 and is predicted to rise INR 123.65Bn by 2024, increasing at a CAGR of ~46.48% during the 2019-2024 period”(ResearchAndMarkets.com).
- 3) Test preparation (to crack national exams)- “The online test preparation segment is presumed to be the fastest-growing segment in the E-learning business because of growth in career-focused population, enhanced Internet infrastructure, and increased in the use of digital payment (eg-UPI, paytm). It is predicted to grow at CAGR of ~50.84% during the 2019-2024 period and reach INR 94.75Bn by 2024” (ResearchAndMarkets.com).

“The change in consumer behavior towards online learning and education, acceptance of new technology, change in external environment and surge in demand from tier 2 and tier 3 cities” (RedSeer and Omidyar Network) are stimulating the growth of the e-learning market.

The traditional education system (blackboard or classroom teaching) is inadequate for the growing population or for people living in remote areas also many other factors are responsible for the people to shifting to online education courses. In today’s competitive world good education is very important, availability of online study materials or courses which are offered by top institutes is making it possible for consumers to be in the competition by easily accessing it without incurring much cost and there are also many government online platforms which are providing the online content and courses so that it can improve the quality of education and increase the reach of education. Parents across the world understand its important in today’s world and are ready to assist their children, one of the biggest financial commitments of Indian parents is paying for their child’s education. We know that content is the most important thing when it comes to education but how the content is delivered makes a huge difference especially in terms differentiation, competitive advantage, customer acquisition and retention therefore, this market segment (e-learning) requires more intensive research so that the players in this segment can design, develop, architect and market their technology based solutions and the digital content for this business. The paper follows the following structure section wise–2-Literature Review, 3-Purpose and Research Questions, 4- Data and Methodology, 5- Results and Discussions, 6- Conclusion Section.

## **2. Literature Review:**

Teaching and learning have evolved very much and continue to change even now due to the introduction of different technologies and change in the condition (population, mentality, thinking, etc) earlier teaching and technology had nearly no relation but now when technology and learning are combined they created e-learning or online learning which is one of the leading technology now a day. "The important factors for the successful implementation of e-learning are- internet accessibility, user interfaces, authentication consistency, student information system, and networking” (Selim, H. M., 2007) which means without proper infrastructure it is not possible to have a seamless experience. (Musa & Othman, 2012) argued about the "impact of technology and other factors on the success of E-learning" as technology combined with a lot of other factors makes e-learning successful. Masrom, M.B. (2008) researched about how information technology has made life easy by presenting online learning technology, the outcome suggests that "the most critical measures for technological factor in terms of ease of access and infrastructure are the browser efficiency, ease of use of course website and computer network reliability. Meanwhile, for institutional support factors, the most critical measure is the availability of technical support or help desk". A study by (Namitha K Cheriyan),2018 it identifies "five factors that can have an impact on the success of e-learning in India" which includes the characteristics of teacher and student, technology and resource to use online platforms and sufficient knowledge and training on e-learning.

E-learning reinforces and increases the reach of learning (Islam & Azad, 2015) to the untouched area as the growth continues as expected, the demand for quality will only increase (Cavanaugh,

2002) and the quality of education plays a crucial part in the satisfaction of a learner. Lee and Dziuban (2002) suggested that the "success of online education greatly depends upon the standard evaluation strategies integrated with the program". (Puri, G.,2012) also worked on determining consumer satisfaction while using technology and various online study material.

(Kaye Shelton Ph.D.) studied various aspects necessary for a good platform and analyzed the quality delivered by the e-learning platforms. "Evaluation is very important in distance education and it consists of various dimensions in alignment with the goals and objectives of a course or program" (Olmstead, 2007). "The studies were also attempted to measure the satisfaction of users concerning the e-learning platforms" (González-Gómez et al., 2012; Teo& Wong, 2013).

With the emergence of many companies and competition in the online education space, the number of services they are providing have also increased to provide the differentiating factor in their product or service. For example, it may allow you to host and sell online courses, allowing you to run your own business, other platforms simply offer an interface during which users can interact with your content.

A study was conducted to "determine the factors affecting the implementation of e-learning" (King & Boyatt, 2015). "Technical problems while using the web may cause student frustration and dissatisfaction" (Choy, McNickle, & Clayton, 2002). Piccoli, G., Ahmad, R., & Ives, B. (2001) also researched about the "virtual learning environment (VLE) where educators can increase learner's satisfaction with the process eg- they can let students self-select the learning environment they deem most appropriate to their skills and preference" it add to the learner's satisfaction. Quality is a very difficult parameter to measure as it depends on a number of factors such as "The curriculum, the educational design, technology used, and school characteristics" (Meyer, 2002, p. 101).

According to (Wood, 2005) "The online learning environment requires the students to take responsibility for their learning". Taha, M. (2014) investigated the successful implementation of e-learning in secondary school The influence of e-learning on the scholars' learning process (Mohammadyari& Singh, 2015) which talk about the "effect of e-learning on a learner".

Monotonous activity for a long time can be burdening but "by combining these activities with simple games we can create a more effective way to motivate people" (Chronos and Sundek, 2011). "By using gamification in e-learning we can induce efficient and engaging learning behavior". (Fogg, 2002) argues that "folks answer computers as they were persons, especially when gaming". Garrison, D.R. (2011) talk about the increasing popularity of online learning or e-learning in the 21st century and the implementation of this technology in various institutions all around the world.

A study by (Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P., 2012) on the "critical success factors for e-learning in developing countries illustrate the importance of curriculum design for learning performance. Technology awareness, motivation, and changing learners' behavior are prerequisites for successful e-learning implementations". Ahmed, T. T. (2013) on the other hand talk about the "instructors' intention to participate in e-learning systems, such as - Creating a supportive culture toward e-learning environment, provide

incentives to motivate instructors, provide related Internet and computer training, continuing to establish more flexible and easy-use e-learning applications and finally increase awareness about the importance of e-learning". Various institutions are using this technology to deliver courses and students and professionals are using e-learning to upskill.

### 3. Purpose and Research Questions:

The research identifies the following gaps based on the literature review –

- 1) It is found a lack of empirical attempts to recognize the components accountable for the expansion of e-learning frameworks in India.
- 2) There is no research available, to the best of knowledge of the researchers, which covers the period 19-20.

Hence, the goal of this research is to distinguish the factors answerable for the rapid development of E-learning in India.

### 4. Data and Methodology :

The goal of the research is to determine the significant components liable for the rapid growth of E-learning in India. To accomplish the purpose behind the study, a random sampling survey (to know the opinion of the individuals) was done employing a self-made questionnaire. 237 people (students of the school, undergraduate, postgraduate, and working professionals) were part of the sample selected mode of survey was online form, which was floated across various platforms to get the response.

**Table 1: Demographic data of the participants**

	<b>percentage</b>	
Gender	Male	44
	Female	56
Academic degree	School	1.1
	High school	3.4
	Under graduate	67.8
	Post graduate	19.5
	Professional	8
Age	15-25	92
	25-35	5.7
	35-45	0
	45 and above	2.3

#### 4.1. Procedure adopted

To gather the appropriate information from the sample population a questionnaire was designed and a random sampling survey was conducted. Several critical factors associated with e-Learning

are identified from the literature which is responsible for the growth of e-learning in India and is used to prepare the questionnaire. the questionnaire was designed by using a five-point Likert scale on fourteen statements associated with different aspects of online learning, each participant was asked to express his/her view on the criticalness of factors contributing to the development of e-Learning in India.

**Table 2: Various factors used in the analysis**

<b>Factors</b>
Cost Of Online Education Is Low
Ease of Using Learning From Anywhere
Growth In Internet
The proliferation of Smartphone, laptop, and other e-learning devices
Traditional teaching Unable To Fulfill The Additional Capacity (Population)
Accessibility of contents anytime
Learning At Your Own Pace
Qualification and experience of Educator
User-Friendly Course Design
Recognition Of Online Degrees
Service Quality of E-learning provider
Marketing and advertisement of E-learning sites
Digital-Friendly Government Policies
COVID 19 pandemic

#### **4.2. Analysis of the data**

All the data collected was imported to IBM SPSS for analysis. The questions with incomplete responses and missing values were expelled from the analysis. Exploratory factor analysis was performed on the data to recognize the variables that are considered significant in the growth of e-learning in India.

#### **5. Results and Discussions:**

##### **5.1. - Table 3 (KMO test)**

The correlations between the factors analyzed in the research are critical at a one percent level when taken collectively. This shows that there exist nonzero associations among the factors chosen, but it does not provide the pattern among these correlations. KMO test is employed to find the sampling adequacy which decides whether the responses given from the sample are sufficient or not. For satisfactory factor analysis, the required value of sampling adequacy is more than 0.5. In the analysis, the KMO value is 0.723 which is more than 0.5 and hence suitable for the factor analysis.

**Table 3: Sampling adequacy test of the data used in the analysis**

Kaiser-Meyer-Olkin (KMO)- Measure of Sampling Adequacy.		.723
Bartlett's Test- Test of Sphericity	Approximate Chi-Square	1351.242
	df	91
	Significance	.000

**5.2. - Table 4 (Communalities)**

Communalities show the amount of the variance and the value of communality should be more than 0.5 to be considered for further investigation, else these factors are to be expelled from further study in the factors analysis. For example, we can see over 85.2% of the variance in “Learning at your own pace”, while 35.9% of the variance in “Online education is low cost” (Table 4).

**Table 4: Proportion of each factor’s variance**

Factors	Initial	Extraction
Online_Education_is_low	1.000	.359
Using_Learning_from	1.000	.637
Growth_in_Internet	1.000	.779
Prolifiration_of_Smartphones	1.000	.625
Unable_to_fulfill	1.000	.462
Accessibility_of_contents	1.000	.681
At_your_own_pace	1.000	.852
Qualification_and_experience_teacher	1.000	.738
User_friendly_Course_Design	1.000	.693
Recognition_of_online_Degree	1.000	.653
Service_Quality_of_Elearning	1.000	.637

Mkting_and_Adv_of_Elearning_sites	1.000	.743
Digital_Friendly_Govt_policies	1.000	.658
Covid_19_Pandemic	1.000	.670

### 5.3. – Table 5 (Total Variance Explained)

The table shows the eigenvalue of several extracted factors whose aggregate ought to be equivalent to the number of items that are used for the factor analysis. We can see that this table is partitioned into three sub-segments for investigation and interpretation purposes we are just concerned about Derived Sums of Squared Loadings (value over 1). Here, the 1st factor accounts for 35.678% of the variance, 2- 47.157%, 3-56.618%, and 4- 65.625%. All the remaining other factors are not critical (Table 5).

**Table 5: Shows how the variance is distributed in all the factors**

Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.995	35.678	35.678	4.995	35.678	35.678	2.663	19.020	19.020
2	1.607	11.480	47.157	1.607	11.480	47.157	2.490	17.783	36.803
3	1.324	9.461	56.618	1.324	9.461	56.618	2.230	15.931	52.734
4	1.261	9.007	65.625	1.261	9.007	65.625	1.805	12.892	65.625
5	.877	6.266	71.891						
6	.734	5.240	77.131						
7	.614	4.385	81.516						
8	.577	4.118	85.634						
9	.490	3.501	89.135						
10	.446	3.186	92.321						
11	.359	2.561	94.882						

12	.333	2.377	97.260						
13	.236	1.689	98.949						
14	.147	1.051	100.000						

#### 5.4. - Table 6 (Component Matrix)

table 6 displays the derived values of each factor under 4 components, these derived values are called loadings of the 14 factors on 4 components. A higher value of loading means the factor contribution is more to the component, here the most important factors with similar outcomes are placed in component 1 similarly in components 2, 3, and 4. The loadings that are under 0.5 should be disregarded as they are not significant (Table 6).

**Table 6: Shows the loading of all factors on the four component**

Factors	Component			
	1	2	3	4
Online_Education_is_low	.449	.257	.106	.284
Using_Learning_from	<b>.568</b>	<b>.557</b>	-.065	.021
Growth_in_Internet	<b>.512</b>	.205	-.461	<b>.511</b>
Prolifiration_of_Smartphones	<b>.671</b>	.342	.232	.059
Unable_to_fulfill	.408	-.371	-.337	.210
Accessibility_of_contents	<b>.691</b>	.314	-.203	.253
At_your_own_pace	.485	.018	<b>.757</b>	.206
Qualification_and_experience_teacher	<b>.551</b>	-.459	.428	.201
User_friendly_Course_Design	<b>.680</b>	-.474	.062	.040
Recognition_of_online_Degree	<b>.730</b>	-.300	-.144	-.097
Service_Quality_of_Elearning	<b>.693</b>	-.320	-.233	-.004
Mkting_and_Adv_of_Elearning_sites	<b>.587</b>	.002	-.185	-.604
Digital_Friendly_Govt_policies	<b>.676</b>	-.099	.007	-.436

Covid_19_Pandemic	<b>.546</b>	.444	.132	-.397
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### 5.5. – Table 7 (Rotated Component Matrix)

The rotation component matrix is used to lessen the quantity of factors and makes the interpretation of the analysis easier. By studying the table below, we can see that Cost of Online Education Is Low, Ease of Using Learning from Anywhere, Growth on the Internet, the proliferation of Smartphone, laptop, and other e-learning devices and Accessibility of contents anytime is substantially loaded (These correlations are commonly referred to as loadings) on Factor (Component)-2

Traditional teaching Unable to Fulfill the Additional Capacity (Population), Qualification and experience of Educator, User-Friendly Course Design, Recognition of Online Degrees and Service Quality of E-learning provider are loaded on Factor (Component)-1

Marketing and advertisement of E-learning sites, Digital-Friendly Government Policies, and COVID 19 pandemic are loaded on Factor (Component)- 3

Learning at Your Own Pace and Qualification and experience of Educator are loaded on Factor (Component)- 4

**Table 7: Shows the reduced factor loading on the components**

Factors	Component			
	1	2	3	4
Online_Education_is_low	.081	<b>.526</b>	.044	.272
Using_Learning_from	-.036	<b>.697</b>	.382	.060
Growth_in_Internet	.414	<b>.750</b>	-.139	-.159
Prolifiration_of_Smartphones	.063	<b>.568</b>	.366	.406
Unable_to_fulfill	<b>.661</b>	.142	-.054	-.051
Accessibility_of_contents	.297	<b>.742</b>	.197	.067
At_your_own_pace	.000	.217	.095	<b>.892</b>
Qualification_and_experience_teacher	<b>.500</b>	.000	.027	<b>.698</b>
User_friendly_Course_Design	<b>.703</b>	.057	.215	.386
Recognition_of_online_Degree	<b>.669</b>	.174	.385	.163

Service_Quality_of_E-learning	<b>.712</b>	.204	.282	.092
Mkting_and_Adv_of_Elearning_sites	.309	.064	<b>.798</b>	-.077
Digital_Friendly_Govt_policies	.383	.086	<b>.687</b>	.177
Covid_19_Pandemic	-.115	.370	<b>.703</b>	.161

## 6. Conclusion:

The significant factors recognized in this research are unique, from other prior examinations. These factors are unique and vary substantially from one study to another. This paper identifies four very important factors for the rapid growth of E-learning in India:

- 1) **Service quality of online education**-Traditional Teaching Unable to Fulfill the Additional Capacity (Population), Qualification and experience of Educator, User-Friendly Course Design, Recognition of Online Degrees and Service Quality of E-learning provider are loaded on Factor (loadings)
- 2) **Technological development**- That Cost of Online Education Is Low, Ease of Using Learning from Anywhere, Growth on the Internet, the proliferation of Smartphone, laptop, and other e-learning devices and Accessibility of contents anytime (loadings)
- 3) **External factors**- Include marketing & advertisements, Government policies and COVID 19 pandemic (loadings)
- 4) **Ease of learning**-Learning at Your Own Pace and Qualification and experience of Educator are loaded on Factor (loadings)

Today's learner wants relevant, self-paced, and personalized content which can be easily accessible from a mobile, laptop, and other electronic devices this need is fulfilled by online mode of learning i.e E-learning. To identify, what are the factors which are driving the shift of traditional learning and education to online mode a study was conducted in which data was collected from 237 people (students of the school, undergraduate, postgraduate, and working professionals) through random sampling and factor analysis was done. This paper identifies four important factors which was identified by the students of the school, undergraduate, postgraduate, and working professionals involved in the survey.

There is a lot of scopes for future studies to happen in this field in the Indian context, studies can be an extended by researching on any one of the factors or a different study with different factors with a focus on the instructor's point of view or the companies providing E-learning services. Online education is going to be a big market in India in the upcoming years and further study and research in this field are required to fulfill the demand of the growing market.

The research identifies the factors that are accountable for the rapid growth of E-learning in India and contributes significantly to the existing literature. This is of great use for startups, companies, and policymakers as this give direct data with respect to the zones to be focused

more to implement E-learning successfully. Before structuring another E-learning stage or while improving the current e-learning framework it is recommended to concentrate on the factors identified in the study. Although we can see the growing market trend in upcoming years, it is important to note that there is a significant number of people in India living in rural area (towns and villages) who have poor internet connectivity or less access to the technology which is hampering the widespread adoption of online learning in India. The massive potential of this market can only be realized once these issues are solved, then India will see an extensive change in few decades driven by E-learning.

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